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NOTE: Many of the technical and design details of the Arrow given in this book are based on material drawn from a variety of sources: (1) A.V. Roe (Canada) Ltd. material now in the archives of the Air and Space Division of the National Museum of Science and Technology at Ottawa; (2) the definitive paper entitled "The Canadian Approach to All-Weather Interceptor Development" presented by Mr. J. C. Floyd before the Royal Aeronautical Society in London on October 9th, 1958, and recorded in the December, 1958 issue of the Journal of the Royal Aeronautical Society (Vol. 62, No. 576); (3) a large number of articles in then current issues of such magazines as "Aircraft", "Canadian Aviation" and "Avro Newsmagazine".

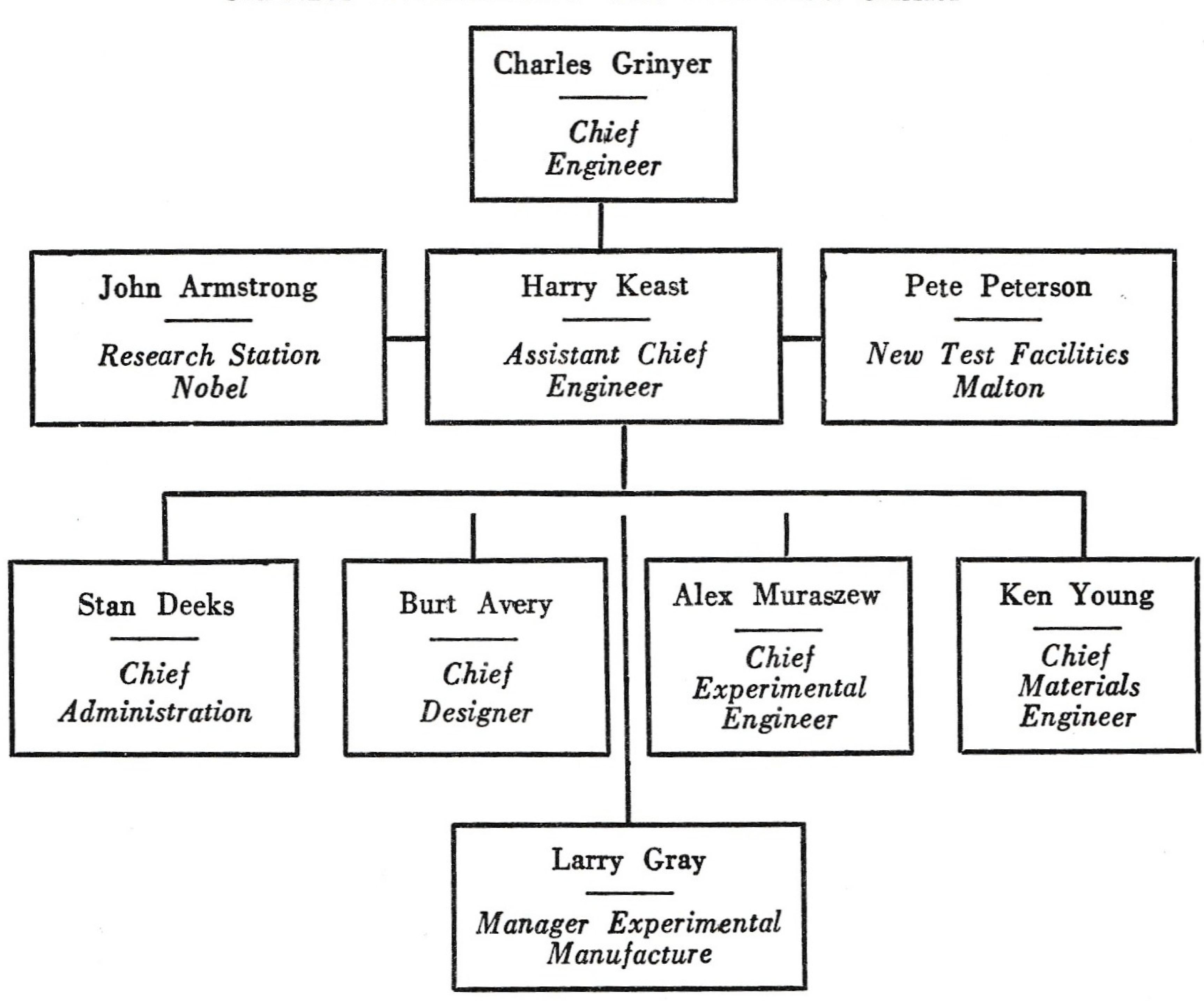
APPENDIX I

The magnitude of the PS 13 project and the relatively advanced status of the Arrow aircraft program prompted serious consideration of what would be the best Engineering Organization to ensure success. Prior to the PS 13 project, and from the time when Orenda Ltd. had its early beginnings as 'Turbo Research', a very capable design engineering team had been established with experience gained from the 'Chinook' engine and from the early units of the Orenda series of engines. This team had been under the direction of Paul Dilworth as Chief Engineer, and Winnet Boyd as Chief Design Engineer. In early 1952, Val Cronstedt, an engineer from Pratt & Whitney, became Vice-President of Engineering, and it was from this time onwards that serious thoughts on future engines received much attention, leading to PS 13.

It was realized at the outset that the new organization must be able to deal with the specializations involved and would have to have full authority over all matters from the design concept through to procurement, manufacture, assembly, test and disassembly of the engines — everything right through to a successful Type Test. This was not achieved in one step; but very quickly an organization was established which gave confidence to the company, to Avro Canada, and to the various government departments involved with the *Arrow* program.

The following chart shows the basic arrangement of the senior divisions of the Engineering Department of Orenda Ltd.

ORENDA ENGINEERING ORGANIZATION CHART



At the peak of the program there were about 1,650 people involved at Orenda; about half of these were on the Engineering payroll; the other half were involved in procurement, manufacture, and assembly of experimental components and engines. There were about 320 professional engineers engaged on this work, of whom about half were Canadians. The other half came from such countries as France, Holland, Poland, Sweden, and Great Britain.

In addition to the senior people named on the organization chart, there were 1,650 people engaged on the program all of whom, at one time or another, played important roles in the success of the program. Help was also obtained from the production side of the company and the Service Department, so that almost every employee may have been involved at some time. In trying to acknowledge this involvement, Charles Grinyer has suggested that we print the names of the last list of the members joining the company's "Ten-Year Club." Even this amounts to only a small fraction of those involved. Nevertheless, the publication of these names indicates that the success was due to more than just a few senior people.

1958 ADDITION TO ORENDA TEN-YEAR CLUB

Carl Allen
Don Anderson
Floyd Archer
Bob Armour
John Armstrong
Phil Ayers

Al Bain Harry Ballantyne Jimmie Beedman Ben Benbow Gerry Benoy Charlie Birch Jimmie Blair Frank Blanchard Al Bodiam Curly Bolton Albert Bown Bob Boyd Bill Boyd Al Breadman Herb Brook Browne Brownie Gene Bryans Bob Burrel Ross Burton

Ralph Cameron
Jack Carroll
Art Chapman
George Chettle
George Chippendale
Dave Chirnside
Jack Clarke
Ken Colby
Peter Comery
Charlie Cooper
Jimmy Cooper
Earl Copeland
Al Craig
Bob Curtis

Jim Davidson
Bette DeJersey
George Dewsnap
Art Dibben
Bill Duncan
Jeff Durrant
Ken Dutton

Erio Early Claire Eatock Tob Ebbern Andy Edward Ted Elder Teddy Evans

Fab Fabierkiewicz
George Faichine
Gene Farion
Ross Ferguson
Red Findlay
Rene Fleming
Les Foster
Albert Frisby
Ed Gale

Blanche Gallagher Chester Giles John Gilmour Al Golightley Jack Gomm Eddie Gougeon Gordon Graham Bill Graydon Clarence Griffith

Curly Hall Ken Harding Stan Harding Ivan Harris Ken Haw Clair Hawn Bill Heraldson George Hillman Jim Hillson Ron Hiorns Norm Horn Andy Horsman Joe Hubble Bill Humenick Garnet Hunter Fred Hussey Hutch Hutchson

Act Inscoe

Ken James Fred Jarman Jerry Jerome Reg Jones

Gord Kearns
Gordy Kearns
Gord Keeler
Bill Kemp
Dan Kingston
Bruce Kirby
Harold Kochler

Gord Lamb
Gil Larner
Joe Lewin
George Lindsay
Dave Lucier
Doug Ludlow
Bill Lunt

Audry MacDonald
Sam Martins
Ed McCluskey
(Mrs.) McGinnis
(Mrs.) McGrath
Ken McGuire
Archie McIntyre
Norm McLaughlin
George McLean
Frank McShane
Mac McVetty
Don Morrison
Howard Mulliss
Bob Mushet
Jack Nesbitt
Walt Newbold

Karl O'Conner Oke Okie

Bill Palmer Bob Pausey Lus Penrose Herb Perks Bill Pinder Chuck Pover Ed Pullen

Walter Reid Less Ridley Al Robb (Mrs.) Robertson Reg Rodgers Jerry Russ Jimmy Russel

Bob Sachs Reg Sampson Jack Savage Bill Scarr Clarence Scott Russ Selway Gord Shaw Reg Simpson Aubrey Smith George Smith Murray Snider Al Spier Alfy Stevenson Frank Strugnell Ralph Stucker Art Sutton Jack Swift Charlie Sykes

Ed Taylor
Jerry Taylor
Harry Terrance
Fred Thomas
Tommy Thomas
Andy Thomson
Lloyd Thomson
Roy Trimble

Cec Vella Tom Virkus

Dave Wales
Bill Walsh
Duffy Walsh
George Ward
Cliff Warren
Leo Watson
Sam Weller
Bill Williams
Aubrey White
Pete Willson
Len Wilson
Monty Woolley
Lefty Wright

Alf Yates